



**Technical Report:
Dar es Salaam corridor Transit Road User Charges
Harmonization Strategies**

**Advisor: Evans S. Marowa, Short-term Transport Operations
Specialist**

**Submitted by:
Chemonics International, Inc.**

**Submitted to:
Regional Center for Southern Africa,
U.S. Agency for International Development**

**Gaborone, Botswana
September 2003**

USAID Contract No. 690-I-00-00-00149-00



TRANSIT ROAD USER CHARGES HARMONIZATION STRATEGY

1. INTRODUCTION.

This paper reviews progress to date towards implementation of a harmonized system of road user charges for cross-border and transit traffic in the SADC region, based on the **agreed SADC model**. It further proposes a way forward to implementation of an updated and harmonized road user charges system for international traffic on the Dar es Salaam Corridor. A key issue is that the proposed system should be based on the agreed SADC model, which makes it imperative that there is a common understanding of what that agreed SADC model is. The next section summarizes the basis of the agreed SADC model, some background studies which led to formulation of the SADC model and an overview of the principles and method used to calculate the SADC transit road user in April 1997.

2. AGREED SADC APPROACH AND STUDY.

2.1. Basis of SADC Approach.

The agreed SADC approach to harmonized transit/cross-border road user charges is founded on a number of principles agreed to by the SADC Committee of Ministers at its meeting in Lilongwe in January 1995. Prior to this a number of initiatives to implement harmonized road user charges had been taken as detailed in the section on background studies below.

2.2. Background Studies.

A number of studies were initiated in the SADC and COMESA regions with a view to pave the way for implementation of harmonized transit road user charges and these are detailed below: -

- In November 1984 the Institute of Transport Economics (Norway) produced a report, “Road User Charges in SATCC Countries – Pilot Report”.
- In February 1988 the Institute of Transport Economics (Norway) produced a report, “Study on Road User Charges in International Road Transport in the SADCC Region – Final Report”.
- In November 1993 a report, “Review of the system for harmonized road user charges” – Final Report was produced jointly by the PTA Secretariat and SATCC-TU.
- In May 1995 a report, “The design and implementation of a harmonized system of road user charges for international road traffic between SACU member States” was prepared VWL Namibia – now Africon Engineering International. The principles to be used to calculate cross border road user charges were adopted by the SATCC Committee of Ministers at their meeting in Lilongwe in January 1995 and are as follows: -

Non-discrimination: i.e. transit vehicles with similar characteristics and loads undertaking trips between the same origins and destinations should be treated equally in respect of the payment of road transit charges, irrespective of the country in which such vehicles are registered.

Equity: i.e. in the context of the proposed charging system the charges need to be fair. Fairness implies that charges should relate to the damage inflicted on the roads by different classes of vehicles without cross-subsidization, as far as is practically possible.

Transparency: i.e. the method of calculating the proposed charges for transit traffic, the elements thereof, and the practical levying thereof should be transparent and broadly acceptable to all participating countries.

Foreign operators to pay in the host country: i.e. foreign operators should pay for the use of road infrastructure in a host country.

Foreign operators to pay for road use: i.e. the charge to be paid by foreign vehicles in a host country should be broadly based on the cost which such vehicles impose on the road network they use in that country.

In a desire to clear some confusion between the 1993 SATCC/PTA study and the 1995 SACU study, a SATCC/SACU Joint Task Team was set up to carry out a study consolidating the two previous studies and propose a harmonized system for road transit charges for the SADC region. The SATCC/SACU Joint Task Team was made up of Africon Engineering International, Pretoria, South Africa and the Roads Department, Ministry of Works, Transport and Communications, Gaborone, Botswana. In April 1997 the SATCC/SACU Joint Task Team produced a report; "Proposed System of Harmonized Road Transit Charges for the SADC Region".

2.3. Principles of Computation: 1997 Report.

In addition to the principles agreed by the Committee of Ministers in January 1995 the SADC Protocol on Transport, Communications and Meteorology stipulates the following guidelines for setting road user charges: -

- The use of roads should be priced so as to improve transport economic efficiency.
- Road users, including foreign road users, should contribute to the full costs of maintaining roads and progressively contributing to the full costs of providing roads.
- The charges should not unfairly impact on inter-modal competition.
- The charging system should be flexible enough to ensure that transit vehicles do not pay twice, for example, through domestic and transit charges for the same purpose.
- The charging system should be simple and inexpensive to implement and acceptable to all competing interest groups.

A further principle is: -

- The charges should fully recover from road users the costs associated with the economically justifiable future road provision and maintenance programme.

A Long Run Marginal Costs (LRMC) approach was adopted to embrace the above principles. The LRMC would include variable maintenance costs, the costs of road congestion, the external costs of environmental damage & road accidents, and the marginal cost of capacity expansion to accommodate an additional road user. On the basis of the agreements reached by the SATCC Committee of Ministers in January 1995, proposed transit charges were to be calculated on a LRMC with the following cost elements included: -

- Routine maintenance costs,
- Periodic maintenance costs,
- Rehabilitation costs, and
- General maintenance costs.

As more data becomes available, the following additional cost elements would be considered for cost recovery: -

- Bridge maintenance costs,
- Reconstruction/upgrading costs,
- Capacity expansion costs, and
- Community costs.

2.4. Road User Charges Computations: 1997 Report

The process used for calculating transit road user charges involves the following three steps: -

- Identifying the regional transit routes;
- Determining the optimal maintenance costs; and
- Allocating the road maintenance costs to vehicle classes on the transit routes.

A techno-economic model, namely the World Bank's Highway Design & Maintenance Standards Model (HDM-III), was used to determine life cycle costs (the optimal annual maintenance costs) for each of the transit routes.

The model used the following input data per route segment: -

- Road Characteristics Data -Length, width, surface type, shoulder type and number of lanes.
- Road Use Characteristics Data
 - Average Daily Traffic
 - Traffic Composition by Class as follows: -
 - Light vehicles i.e. less than 3.2 tonnes,
 - Buses,
 - Heavy Goods Vehicles (HGVs) with 2 or 3 axles,
 - HGVs with 4 or 5 axles,
 - HGVs with 6 axles or more.
- Road Pavement Condition Characteristics
 - Current Pavement Condition Data in 6 different categories,
 - Pavement strength and construction data or pavement structural numbers, where applicable,
 - Environmental data – monthly rainfall and moisture classification,
 - Terrain data,
 - Pavement history.

The model uses the input data to predict the pavement deterioration annually over a twenty-year period in terms of pavement roughness, which is a function of the structural strength, the pavement initial condition (cracking, rutting, raveling and potholes), the axle loads and the environmental factors.

The model then generates appropriate strategies, which are then evaluated in terms of life cycle costs and benefits over the twenty-year period. For each route segment the annual maintenance costs per km are allocated to the following three cost categories i.e. ESA related costs, Vehicle related costs and Fixed costs. The three cost categories are then individually

allocated to the five vehicle classes. The final charge per vehicle class for each country is the weighted average of the total allocated costs per road section. Vehicle kilometers are used for calculating the weighted average.

The results of the calculations for the Dar es Salaam Corridor countries are as follows: -

Country	Light Vehicles	Buses	2-3 axle HGVS	4-5 axle HGVS	6+ axle HGVS
Malawi	1.35	5.40	7.90	15.55	20.50
Tanzania	0.90	3.90	5.70	11.40	15.05
Zambia	0.90	4.00	5.90	11.90	15.70

The report recommended that the calculated charges, the principles on which they were based and the methodology for their calculation, be approved as the basis for levying new harmonized transit charges for the SADC region.

3. PROGRESS IN IMPLEMENTATION: APRIL 1997 TO DATE

In the second half of 1997 SATCC carried out a review of the April 1997 Report and produced a country by country summary dated September 18, 1997 as a process of confirming the status in each country in preparation for implementation.

At its meeting in 1999 the SADC Committee of Ministers made Decision Number 36 of 1998 which directed that implementation of harmonized user charges was to start in January 1999.

Noting that no progress had been made towards implementation, the SADC Committee of Ministers Decision Number 25 of 1999 directed that a Harmonized Implementation Manual was to be produced and the Sub-Sectoral Committee (SCOM) was to review charges in 2000.

The SADC Committee of Ministers Decision Number 9 of 2000 requested SADC Member States to provide data by 31 July 2000 to enable a review of charges.

Yet again, the Committee of Ministers Decision Number 5 of 2001 urged SADC Member States to submit traffic data by 30 June 2001.

The above decisions of the SADC Committee of Ministers highlights that there has been no progress in implementing the agreed SADC approach.

SATCC-TU is in the process of securing services to: -

- Review the transit road user charges existing in the SADC region,
- Update the calculation of transit road user charges for every country,
- Produce an implementation manual, which is country specific, based on the gap between the current status and the desired goal of operating a harmonized system of transit road user charges.

Draft terms of reference for the sourcing of the consultancy services have been submitted to the European Union (EU), the project sponsors for approval. Implementation is expected to commence soon after approval.

4. CURRENT CHARGES IN THE DAR ES SALAAM CORRIDOR

The current transit road user charges applicable in the Dar es Salaam corridor countries are as tabulated below: -

Country	Light Vehicles	Buses	2-3 axle HGV	4-5 axle HGV	6+ axle HGV
Malawi	-	5.00	6.00	10.00	10.00
Tanzania	1.00 flat	3 or 6 flat	6.00	16.00	16.00
Zambia	-	-	-	10.00	10.00

5. ISSUES ARISING FROM THE CORRIDOR TRIP

There is a perception that the transit user charges for Tanzania are too high.

There has been lack of action to implement a harmonized system for road user charges for international traffic.

There has been lack of action to implement domestic traffic road user charges based on the system adopted by SADC for international traffic.

The interplay of international traffic road user charges on other forms of road user charges in member states such as fuel levy, vehicle licensing fees, toll roads etc seems to have a bearing on how quickly countries will move. The international traffic road user charges revenue generation potential as compared to other forms of charges as fuel levies may not be viewed as a good enough incentive to move at full speed to harmonization without a complete review of all forms of road user charges to conform to the principles of full recovery of road costs from road users while ensuring that the users pay equitably for the damage they cause to the roads. There is need to appreciate that this is an issue of economic efficiency and ensuring that the user pays principle is progressed in support of fair intermodal competition.

6. IDEAL APPROACH

Stakeholder awareness of status quo

The issues highlighted above reflect the need to ensure all stakeholders affected by implementation of harmonized road user charges understand the background to the current status in each member country and the Agreed SADC Approach.

Location of HDM-IV model

It would be ideal that ASANRA keeps custody of the HDM-IV model and be responsible for updating the road user charges on the basis of updated information to be supplied by Member States.

Review of Assumptions of the 1997 Computations

There is need to ensure that all the assumptions made in the 1997 computations are valid and reflect the status on the ground as far as is reasonably practical.

Input Data

Member States need to collect input data for a re-run of computations of road user charges on HDM-IV model.

Transit RUCs collection mechanisms

Member states need to seriously consider adoption of a regional coupon system to avoid the problems of paying charges at border posts operated by a central clearinghouse such as FESARTA.

Transit RUCs funds dedication to road maintenance

In order to actualize the user pays principle it is important that initiatives are taken to ensure that all RUCs are collected and channeled to a dedicated Road Fund for maintenance of the roads.

Interaction of transit RUCs with other RUCs in place

Fuel levies constitute the major source of revenues for RUCs. There may be a need to review these, in particular, the domestic RUCs to confirm that they support the user pays principle in a manner that is equitable to all the classes of road users as far as is reasonably practical.

SATCC-TU Initiative

The SATCC-TU project referred to in 3 above would take care of the ideal implementation approach described above. In this regard it would be appropriate for the Dar es Salaam Corridor to support this initiative without implementing its own independent ideal approach outside the SATCC-TU initiative.

7. WAY FORWARD

Stakeholder awareness of status quo

The issues highlighted in section 5 above reflect the need to ensure all stakeholders affected by implementation of harmonized road user charges understand: -

- the background to the current status in each member country, and
- the Agreed SADC Model

so that they can support the implementation.

Preparations for SADC/SATCC Initiative

The Interim Committee Meeting in Blantyre, Malawi agreed that the corridor should be proactive by ensuring that member states are ready to support the SATCC Initiative by: -

- having all the data required for computation of RUCs by using the HDM-IV Model readily available for this purpose.

- reviewing all assumptions used in the 1997 computations to ensure that they reflect the status on the ground as far as is reasonably practical in each member country.

- computing revised RUCs and agreeing on the values for implementation should the SATCC initiative not take off by end of July 2003.

- putting in place mechanisms for channeling the collected RUCs to dedicated Road Funds for the maintenance of roads.

The Dar es Salaam Corridor Interim Secretariat will coordinate this with the facilitation of the Hub.

ANNEXURE I

ASSUMPTIONS & INPUT DATA FOR THE 1997 RUCs

The following is a list of assumptions and input data that was used in calculating the RUCs in 1997. These would need to be reviewed and updated to reflect the current situation as far as is reasonably practical.

1. Transit Route Network.
There is need to confirm that the transit routes used for calculating the maintenance costs are still valid for current traffic profiles.
2. Road Characteristics Data per Road Section.
The input data elements for each road section were length, width, surface type, shoulder type and number of lanes. These would need to be updated.
3. Road Use Characteristics Data.
Input data elements were average daily traffic (ADTs), composition of traffic by vehicle classes, Equivalent Standard Axles (ESAs) per vehicle class and Gross Vehicle Mass (GVM) per class.
 - a. Is there any need to review vehicle classes on the basis of available weighbridge data?
 - b. Where country data was available, the average composition of traffic by vehicle class of those countries was used as the composition for countries for which data was not available. Current data needs to be made available.
 - c. The ESAs per vehicle class was calculated as the actual average per class per country from observations of the loaded/empty ratios of trucks on the routes.
4. Pavement Condition Characteristics Data.
The input data elements were:-
 - Current pavement condition data based on six characteristics of pavement condition namely, all cracking, wide cracking, raveling, rutting, potholes and roughness index.
 - Pavement strength and construction data or pavement structural numbers, where available
 - Environmental data in terms of monthly rainfall and moisture classification terms used in the HDM-III model
 - Terrain data
 - Pavement historyThe above data elements would need to be updated.
5. Optimal Annual Maintenance Costs per Road Section.
Using the above data, the model calculates maintenance costs per kilometer for each of the following categories: -
 - Routine maintenance cost
 - Periodic maintenance cost
 - Pavement rehabilitation cost.

The fourth cost category of general maintenance cost (i.e. administrative or agency overhead costs as well as traffic policing costs) was estimated as a percentage of the other three maintenance costs. The basis of these estimates needs to be reviewed.